

The Files - RD-107, T.O.5

28 November 1958

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Trip Report No. 2 - Radio Circuit Development

1. On 24 November 1958 a visit was made to the R&D Laboratory to observe the malfunctions of the receiver test vehicle and the selective call system. Persons present during these observations were:

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-E/R&D-IP  
-C-E/R&D-IP (part time)  
-OC-E/R&D-EP

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2. The receiver test vehicle was just returned from the [REDACTED] where general inspection was made to eliminate spurious oscillations reported by this Agency. [REDACTED] engineer, stated that he could not make the receiver act as it had in the EP office during his last visit. During that time, thumping or pressing of its sides would create howls and squeals and one could hear general oscillations in the ear phones.

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3. Upon my arrival at the R&D Laboratory, [REDACTED] stated that the receiver still had spurious oscillations and that because of these oscillations he could not make an efficient evaluation. He also stated that the selective call system did not perform when using the code indicated in the Final Report submitted by [REDACTED]

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4. Using a signal generator and an oscilloscope with the receiver set for the CW mode of operation, the writer observed the following:

- a. The output was distorted when the BFO was set to produce a frequency below 2.5 kc. Above this frequency a signal could be passed through the receiver without distortion.
- b. Receiver drift was excessive and prevented frequency measurements.
- c. Spurious oscillations were noted when there was no input signal applied and they appeared to be periodic. Because of slippage of the tuning dial, no measurement was made to determine at what periodic rate these oscillations appeared.

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- d. In the AM mode of operation the incoming signal with 30% modulation at 400 cycles was distorted and harsh to the ear.
- e. Spurious oscillations were also noted in the AM mode of operation.
- f. The ON/OFF, CW and AM switch was difficult to place on a particular mode of operation because of mechanical slippage.

5. When inspecting the encoder of the selective call system, the operation was noted to follow a decaying action. This decaying action was such that the start pulse, after several firings, would drop out. Continuing the firing without adjustments, the last pulse would also drop out of the pulse or code sequence. From this point on, any one of the remaining pulses may or may not drop out. It was noted that by resetting the insert button on the encoder after each firing sequence, full pulse information was restored and the equipment operated satisfactorily. The decoder of the selective call system would not even function. It was later determined that a 2N165 transistor in the Schmitt trigger oscillator was defective. Having none of the 2N165 transistors in stock, no further effort was made to place the device in operation.

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6. The writer called [REDACTED] and requested that several 2N165 transistors be supplied to repair the decoder. In discussing the decaying action of the encoder, [REDACTED] stated that the multiplier circuit, which counts by thirteen, may be affected by temperature and thus cause this decaying action. He further stated that a very slight adjustment could be made by removing one or two of the windings on T-1 which can be located in Figure 7 of the Final Report.

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[REDACTED]  
OC-E/R&D-EP/DWR:jd (4 December 1958)

cc: R&D Subject File

Monthly Report ✓

R&D Lab

OC-T

R&D Chrono

EP Chrono

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